

REPRESENTATIVE CLAIMS AND STATEMENT OF THE INVENTION:

1. A process to inhibit or reduce the growth of bacteria and other pathogens in a liquid, comprising:

- 5           a. adding carbon dioxide (CO<sub>2</sub>) to the liquid; and  
            b. thermally inactivating the bacteria and other pathogens in the liquid, wherein the added CO<sub>2</sub> cooperates to increase the efficacy of the thermal inactivation process.

10   2. A process to enhance the efficacy of a thermal inactivation process of a liquid, comprising:

- a. the addition of carbon dioxide (CO<sub>2</sub>) to the liquid; and  
            b. thermally processing the liquid; wherein the added CO<sub>2</sub> cooperates with the thermal inactivation process so that the death rate of bacteria and other  
15           pathogens in the liquid is increased over the death rate that occurs during thermal inactivation carried out in the absence of the added CO<sub>2</sub>.

20   3. The process of claim 1 or 2, wherein the cooperative effect of the added CO<sub>2</sub> and the thermal inactivation process results in a reduction of undesirable biological changes in the liquid.

4. The process of any of claims 1, 2, or 3, wherein the shelf life of the liquid is increased thereby.

25   5. The process of any of claims 1, 2, or 3, wherein the liquid comprises a dairy product, a vegetable juice, a fruit juice, a plant extract, a fungal extract, or a combination thereof.

30   6. The process of claim 5, wherein the liquid comprises a dairy product.

7. The process of claim 6, wherein the dairy product is milk.

8. The process of any of claims 1, 2, or 3, wherein the liquid contains one or more flavoring agents.
- 5 9. The process of claim 6, wherein the flavoring agent is a fruit flavor, vegetable flavor, chocolate flavor, vanilla flavor, soft drink flavor, or malt flavor.
10. The product produced by any of claims 1-9.
- 10 11. The process of any of claims 1, 2, or 3, wherein the concentration of added CO<sub>2</sub> is about 400-2000 ppm.